ANNUAL REPORT

Maryland Agricultural Experiment Station

1982 Annual Report

University of Maryland
College Park ■ Eastern Shore

From the Director

In the last year, the Maryland Agricultural Experiment Station established two important benchmarks showing our desire to improve the environment in which research is conducted.

Early in 1982, the Station established at the Wye Research and Education Center a new program that, we believe, can accelerate the pace of scientific research and its transfer to those people who most need that information.

The Institute for Advanced Agricultural Concepts takes a holistic approach in solving agriculture's problems, an approach that enables teams of scientists from different disciplines to work together on a project. Solutions resulting from this cooperative effort will be close approximations of total answers, rather than answers to a piece of the problem. It means, for example, that an agribusiness person does not have to wait for someone else to assemble all of these piecemeal results to arrive at a final solution to a particular problem. The program development is an evolutionary process that will change significantly the way the Experiment Station conducts and manages research resources.

The second benchmark is this year's continued development of the Sharpsburg Research and Education Center. Five years ago this overgrown and poorly-maintained facility was acquired from the federal government.

Since then, the Station has invested considerable time and resources to develop a research farm capable of serving the special agricultural interests of Western Maryland.

During the summer of 1982 we opened our doors to the public for the first time, and hosted over 500 members of the Maryland Horticultural Society, farmers, agribusiness persons and members of the lay public. There they viewed our new research program that will include agronomy, entomology and horticulture studies.

Both of these benchmarks are indicators of things to come from the Maryland Agricultural Experiment Station and our contribution to the state's agricultural growth.

As you read this year's annual report of research by the Maryland Agricultural Experiment Station, you will notice a change from how we have presented this material to you in the past. This year we are giving you brief, concise explanations of research highlights. In addition, we offer two case studies that outline exciting new frontiers for agricultural science.

I welcome your views and comments on this report. The Maryland Agricultural Experiment Station exists to serve you, the citizens of Maryland.

W. Lamar Harris

W. Lamar Harris
Director
Maryland Agricultural Experiment Station

The mission of the research program of the University of Maryland Agricultural Experiment Station is to provide timely and significant information, knowledge and technology to the state's number one industry—agriculture.

The following are highlights of gains made in the last year in the Station research program of objectives, leading us toward that goal.

Development Opportunities

Wheat—
Another Record Year

For the second year in a row, scientists used a team approach to record a more than 100-bushel-per-acre yield for wheat in Maryland under experimental conditions.

Agronomists and botanists believe the 119 bushels per acre posted for the widely-used variety 'Tyler' is the highest yield recorded in Maryland. The average yield for Maryland wheat in 1981 was 38 bushels per acre. If all wheat varieties grown in Maryland enjoy the same success as 'Tyler', the state could nearly triple its wheat production.

Their success with 'Tyler' follows a similar success last year with 'Blueboy', a variety once spurned by researchers and farmers because of its susceptibility to the fungus disease powdery mildew.

Agronomists and botanists used the same program in 1982 for 'Tyler' that brought them success with 'Blueboy' in 1981: High rates of fertilization, applications of the experimental fungicide Bayleton and a growth regulator to keep plant height in check.

Scientists are expanding that research program now into other small grains, hoping for similar successes. To date, they have found that varieties of grains susceptible to powdery mildew show the most promise of reaping record yields when fungicides like Bayleton are coupled with high rates of fertilizer. Their next step is to determine results when application rates of costly fertilizers and fungicides are decreased.

Forestry Research—
Studies in a Renewable Resource

Forestry researchers are exploring a number of ways to improve the productivity of Maryland's forest land. They are developing new hybrid pines that can be used on otherwise marginal land and yield quality timber.

Forestry scientists in 1982 successfully grafted a larger number of highly desirable pitch pine parent trees to root stocks in the field as the first step in a program they have designed to establish an experimental seed orchard.

Some of the grafted pines in that seed orchard are starting to "flower" now and the scientists plan to make a number of hybrid crosses between pitch and loblolly pine. Their goal: To develop through exhaustive genetic selection the tallest, most vigorous and well-formed hybrid pines for reforestation of marginal land or stripmined land in western and north central Maryland.

Forestry researchers are also working in "mycorrhizal" experiments. This selective use of beneficial fungi grows with tree roots to help them grow healthier and faster.

In addition, forestry researchers are studying fertilization, pruning, coppicing, site adaptability, and propagation for one tree species, *Paulownia*. It shows particular promise as a valuable short rotation cash-crop for export and domestic use. This tree species may be a viable product for small woodland farmers of Maryland.

In addition to its weight and strength, *Paulownia* may have another major advantage over other furniture-grade wood: Scientists believe it can be grown profitably on land considered marginal for other crop production.

The major problem in producing a quality *Paulownia* is a general lack of knowledge on how to grow it in plantations in Maryland and neighboring regions.

Forestry scientists have begun special pruning techniques and "coppicing" as a means of producing a fast growing, tall, straight, knot-free trunk for eventual valuable sawlog quality.

Their results: 2- and 3-year-old root stocks producing straight sprouts now average 15 feet, leading the scientists to believe they may well be on their way to establishing commercial production techniques for *Paulownia* in Maryland.

Case Study:

Tissue Culture Research

This nation's store of prime farmland is being reduced bit by bit, acre by acre, every day. It leads many in agriculture to wonder what is going to happen as more of the best crop-growing land gives way to urban sprawl or other nonfarm uses: Will farmers have to resort to growing tomatoes in the sand by the seashore?

That may not be such a far-fetched idea, according to scientists who are conducting tissue culture studies for the University of Maryland's Agricultural Experiment Station.

As a matter of fact, botanists recently isolated tissue from one tomato variety that survived on a liquid diet of 60 percent seawater.

Tissue culture studies are sometimes linked with plant genetic engineering. Although these tissue culture techniques used by Maryland scientists do not involve recombining bits of DNA—the genetic messengers—into favorable combinations, tissue culture does involve working with groups of cells and attempting to manipulate in some manner how the cells' genes express themselves.

One of those manipulative techniques involves subjecting plant cells to a "mutagen"—a chemical substance that alters the genetic structure of the cells. The purpose of this is to cause, of course, a favorable mutation, such as a tomato plant that can survive on seawater, or in soils that are laden with undesirable substances.

Plant geneticists say Nature is equipped already to do virtually the same thing the scientists are doing. Some plant varieties will undergo their own natural mutation process. But the odds that the mutagen will be one desired by plant breeders are at best perhaps one in a million.

Tissue culture, on the other hand, combined with selectively inducing mutations, speeds up the process and tips the house odds in the other direction.

How does this help the plant breeder? In addition to speeding up the breeding process, selective inducement of mutations offers scientists more plant varieties to work with.

Those same bits of tomato tissue Maryland botanists have manipulated to exist on 60 percent seawater may regenerate into a new tomato plant variety that can be irrigated with cheap, available seawater. In turn, this new seawater-gulping variety could be crossed with another tomato variety that offers high yields and acceptable flavor.

There are a number of challenges to this whole process. One is finding the right mutagen to get the desired mutation. A

second challenge is to "regenerate" an entire plant from that group of mutant cells, hoping that the final produet will "express" the same mutation as that found in the original cells. Finally, a third challenge is the method and mutagen used for one plant variety seldom works with any other variety. So, each plant must be studied individually and manipulated separately.

Other examples include work by agronomy and horticulture researchers who also are interested in tissue culture techniques. Horticulturists are working with Asiatic cultivars of lilies to find out if tissue culture can help them clone in a short period of time those bulbs that have desired dormancy characteristics. They believe it could save breeders 7 to 16 years of work associated with the traditional method of screening for desired dormancy characteristics. And agronomists are using the same technology to screen out undesired disease traits in breeding new Maryland tobacco varieties.

Tissue culture is one of the newer tools agricultural scientists use to create the food and fiber "supercrops" of tomorrow. The technique involves regenerating an entire plant from a single plant cell or group of cells. Maryland botanists and horticulturists are using tissue culture to create whole new types of genetically improved vegetable and ornamental crops, fruit-producing plants and trees. Genetic improvement doesn't just offer a potential for bigger crops, larger harvests or aesthetic variety, however. Maryland scientists are counting on the process to produce plant varieties that are highly disease resistant and tolerant to less-than-suitable growing conditions.

Reductions in Expensive Inputs

Nitrogen—
Getting the Most Out of It

In 1981, Maryland farmers bought more than 115,000 tons of nitrogen fertilizer. Essential for today's no-till methods of crop management, nitrogen fertilizers are becoming increasingly expensive to produce.

Scientists are studying corn, Maryland's most important grain crop, to determine the best method of cultivation, the best source of nitrogen fertilizer, the most expedient application methods and the ideal application time to enhance nitrogen's efficiency.

In their studies, agronomists found that when they coupled urea-based nitrogen fertilizers with injection application methods, no-till corn produced yields superior to conventional tillage corn under other types and methods of application. Part of the key is correct timing of application, according to the agronomists. Injecting urea nitrogen after early season rainfall reduces soil erosion and can increase no-till yields as much as 18 bushels per acre.

In another study at the University of Maryland-Eastern Shore (UMES), researchers are exploring a different way to reduce the use of commercial nitrogen fertilizers.

The traditionally accepted practice of planting a winter cover crop in a field may do more than just protect the soil and preserve nutrients for next year's corn crop, researchers believe. The right winter cover crop could serve as a "natural" source of those nutrients for spring planting of no-till corn in Maryland.

Soybeans—
Cultural Changes Reduce Inputs

Researchers turned away from expensive commercial inputs for soybeans and tried something different last year. To get extra bushels they changed the way a field of soybeans looks and took advantage of man's oldest, cheapest input—the sun.

Under normal circumstances, soybean fields are thick, uniform carpets of dense foliage hiding their protein treasures. However, experimental fields at the Wye Research and Education Center have a decidedly "ridged" appearance for maximum utilization of "free" solar energy. Every other row appears to be higher than its immediate neighbors, and foliage density changes from row to row.

There was a reason for that, according to agronomists. Alternating rows of soybeans with cultivars that differed structurally in canopy height, canopy width and leaf size should change the amount of light getting to each plant.

The difference in height between rows allowed a more even distribution of light in every row. Differences in foliage density allowed more light to penetrate within rows. The results: More light, evenly distributed through cultivar pairing, improved photosynthesis and brought an average yield improvement of approximately 7 bushels per acre over cultivars that normally would appear alone.

Threats to Agriculture

Disease—
Productivity's Flip Side

Poultry scientists believe they have found factors that may explain why broiler chicks, apparently normal at hatching, succumb to seizures less than 2 weeks later and eventually die.

Previous studies showed an anatomical basis for the disorder. Female offspring, carrying the recessive gene, suffered from a complete degeneration of a cranial nerve and its pathways serving their senses of hearing and balance.

Now scientists have found a sex-linked genetic defect: It appears that the protein responsible for carrying iron to the chick's brain and certain forms of iron are found in abnormally large quantities in the plasma of some chicks. These physiological studies indicate a defect in iron metabolism may be responsible for the seizure disorder.

The Human Link

Nutritional irregularities in egg-laying hens may provide a link to skeletal problems in aging humans, according to poultry scientists.

Studying the huge calcium demands of laying hens, the scientists found that as hens age they secrete smaller amounts of a female sex hormone called estradiol. The hormone, they say, is responsible for converting vitamin D to its active form which, in turn, may be associated with preventing bone fragility in older animals.

This same process, they reason, may hold true for aging humans whose bones become brittle and break easily. It also may offer some explanation of why the elderly appear to shrink or get shorter. The depletion of certain hormones may be responsible for poor skeletal conditions in the aged population, according to their studies.

In another study that demonstrates a link between animals and human subjects, veterinary scientists found that human interferon may be responsible for stemming certain viral infections in dairy cattle.

The results of this study are significant, say the scientists, because it demonstrates that some human antibodies are not strictly species specific—that is, human interferon's ability to stop the spread of viruses may cross over to other species as well as humans.

Embryonic kidney cells from dairy cattle treated with human interferon released fewer infectious virus particles than those untreated, they found.

They believe the human interferon acts as a soldier-messenger in immune systems. Against invading infections, interferon leaves infected cell membranes and "warns" neighboring healthy cells so they may erect early defenses. And, in some cases, interferon "scrambles" viral messages carried in the genetic coding of invading viral cells.

Gypsy Moth— Continuing the Battle on a Different Front

In their search for ways to control the voracious gypsy moth, scientists are placing more basic research emphasis on gypsy moth's natural enemies. Parasitic wasps, for example, are one type of natural enemy scientists believe may bring this pest under control.

The entomologists believe a technique they use to measure food consumption by parasites may be a useful screening tool. The screening tool could be used to predict or evaluate the effectiveness of different parasite species in areas where gypsy moth's diet changes.

Entomologists measured parasites' food consumption by examining nitrogen utilization in the pupal stages of two species of parasitic wasps commonly used in gypsy moth control.

Station entomologists discovered that, in general, both species of parasitic wasps found more appealing those gypsy moths that were reared on synthetic diets.

Of those gypsy moths reared on natural foliage diets, one wasp species found most appealing the moths fed diets of red oak, a tree species most commonly devoured by gypsy moths in New England. The other species most preferred moths reared on gray birch diets. This information could help scientists target specific parasites for areas where they might do the most good against gypsy moths.

Teaming Computers, New Technology

Quickly diagnosing respiratory problems in animals and humans is critical for rapid treatment.

Agricultural engineers have teamed the near-instantaneous data analysis and retrieval capabilities of the microcomputer with an air perturbation device (APD) to give veterinarians and physicians a head start in diagnosing severe respiratory problems.

The APD measures the disruption of air flow without entering the subject's body, and the microcomputer—with programs developed by agricultural engineers—analyzes the information, providing immediate diagnostic and screening information to doctors and veterinarians.

Case Study:

Monoclonal Antibody Research

Consider the plight of immunologists: Developing the one and only vaccine that is ideally suited to prevent a specific disease is a little like trying to find the ideal match of car and buyer in a sales lot of unlimited possibilities. Scientists estimate that, for some diseases in man and domesticated animals, there are literally thousands of subtle variations of each disease-causing organism.

This has made immunization programs for some diseases like infectious bronchitis virus in poultry very difficult in the past. Injecting a very specific vaccine into a bird will stimulate antibody production against one invading organism. But it will not stimulate antibody production against all the variants of the disease-causing agent. In some cases, some of the vaccines available up to now produce no response.

New technology is developing at the University of Maryland which may help immunologists overcome this problem for any number of animal species.

The new technology is laboratory production of what scientists call "monoclonal antibodies." It is the unique relationship that these highly refined antibodies share with invading substances in an animal's body that make them so special, according to scientists. A specific "monoclone," in scientists' jargon, can detect and identify one and only one specific component in disease-causing agents that invade the body. Not only can monolones distinguish between subtle differences in the proteins that make up an invading antigen, they can tell the difference between some amino acids. Whether you call it highly sophisticated radar, or say the monoclone is "blind" to all but its complement in the invading army of disease, the relationship is unique.

The possibilities for monoclones go beyond diagnostics, Maryland scientists believe. Dairy researchers believe it could lead to an actual vaccine for mastitis, a thief that makes off with $24 million a year from the Maryland dairy industry and nearly $2 billion a year from the nation's dairy producers. Entomologists are using the technology to search for specific viruses that will help them control gypsy moth. And a monoclone's unique ability to scour thousands of irrelevant substances and home in on a single substance may provide another vehicle for disease treatment: Scientists reason that if they can manipulate a monoclone to "carry piggyback" a specific disease-killing substance such as a radioactive isotope, they can inject the two directly into unhealthy tissue where it will draw a bullseye on only the diseased tissue, leaving healthy tissue unscarred.

If scientists can produce in the laboratory enough specific monoclonal antibodies to detect large numbers of the variations and countless mathematical permutations of animal disease agent components, they theorize that they may well be on their way toward developing more effective vaccines.

To date, Station veterinary scientists have isolated a bank of 200 individual hybrid antibodies, specific to some disease components for infectious bronchitis virus and Newcastle disease. Both are serious predators on the multi-million dollar Delmarva poultry industry, indeed on the world's population of poultry. Of those 200, however, scientists have fully characterized only 12 monoclones to the point that they are useful in actual immunological work—the process of accurately characterizing these substances is that laborious and time consuming.

Coupling monoclonal antibodies with an assay system developed by University of Maryland veterinary scientists, researchers believe they can cut the amount of time needed to accurately diagnose disease from months, in some cases a year, down to no more than a few hours.

In turn, coupling that diagnostic technology with another technique developed by Maryland scientists—called "flock profiling"—could help animal producers virtually keep a daily finger on the pulse of flock or herd health, rather than waiting to diagnose a problem after it has reared its ugly, and oftentimes irreversible, head.

Photographs about this case study begin on the following page.

Environmental Protection

Metropolitan Water Supplies

Early this year federal researchers discovered that drinking water supplies in the Baltimore and Washington, D.C. metropolitan areas contained traces of triazine herbicides. These herbicides are used for nonagricultural and agricultural weed control. The critical question was how much of these herbicides was present in the drinking water supplies of the two metropolitan areas.

The Maryland Agricultural Experiment Station quickly set to work with state and federal agricultural officials and their environmental health counterparts. By mid-August scientists from these combined agencies had produced preliminary research data on the levels of herbicide in drinking water supplies during the period of highest use for weed control. Their finding: Measurable levels of the herbicides were indeed there, but the contamination level was so small it posed no health or environmental risk.

Examining a 9,000-Ton Garbage Problem

Maryland is blessed with a $190 million a year seafood processing industry and an annual harvest of more than 13,000 tons of Chesapeake Bay blue crabs.

Of that vast cornucopia, however, only 20 to 25 percent of the gross weight finds its way to crab lovers—the remaining 9,000 tons end up as a major garbage problem for processors.

Agricultural engineers are testing new wastewater and solid waste treatment technologies that may offer some help to processors and, ultimately, to the Chesapeake Bay's environment.

One study combines existing aerobic biological treatment technology with sand and activated carbon filtration to reduce solid waste in crab processing wastewater. A final step uses ultraviolet radiation to disinfect wastewater before it is discharged into inland waterways. This replaces older methods of chlorination, potential toxins to aquatic life in the Bay.

Solving the wastewater problem however, still leaves that 9,000-ton pile of solid waste and nowhere to put it. Engineers are looking at new composting technologies that will convert that pile of garbage into something useful—fertilizer—with low energy inputs.

Although they have developed a laboratory-scale composting system, agricultural engineers are hesitant to give an unqualified green light to crab waste composting for fertilizer. They say they need to know more about how the process works prior to its movement from the laboratory to industry.

Agricultural Runoff

The recent advantages of no-tillage farming methods have meant producers must use additional herbicides to combat unwanted vegetation in their fields.

Along the shores of the Chesapeake Bay, Maryland corn and soybeans are prodigious examples of the success of no-tillage farming.

But at the same, time, scientists and those who make their living from the bounty of the Chesapeake have long noticed the decline of aquatic grasses, fish and shellfish in the Bay.

Is there a connection between these declining plant and animal populations and herbicides from farmland that may wash into the Chesapeake?

Maryland and USDA researchers have addressed this question by asking more specifically: What are the actual amounts of herbicides washing into test sections of Bay wetlands? Do they accumulate over time into concentrated areas, or do they dissipate?

As scientists continue to analyze data, so far they have found that movement of herbicides into wetlands is greater during years of heavier rainfall—as might be expected. Their studies indicate, however, that herbicides do not concentrate in single areas. Instead, they dissipate over time. And concentrations found during wet years have never been high enough to stop growth of submerged aquatic vegetation as has been suggested. Thus, the alleged link between herbicide runoff and declining vegetation has not been established.

Dredged Spoils

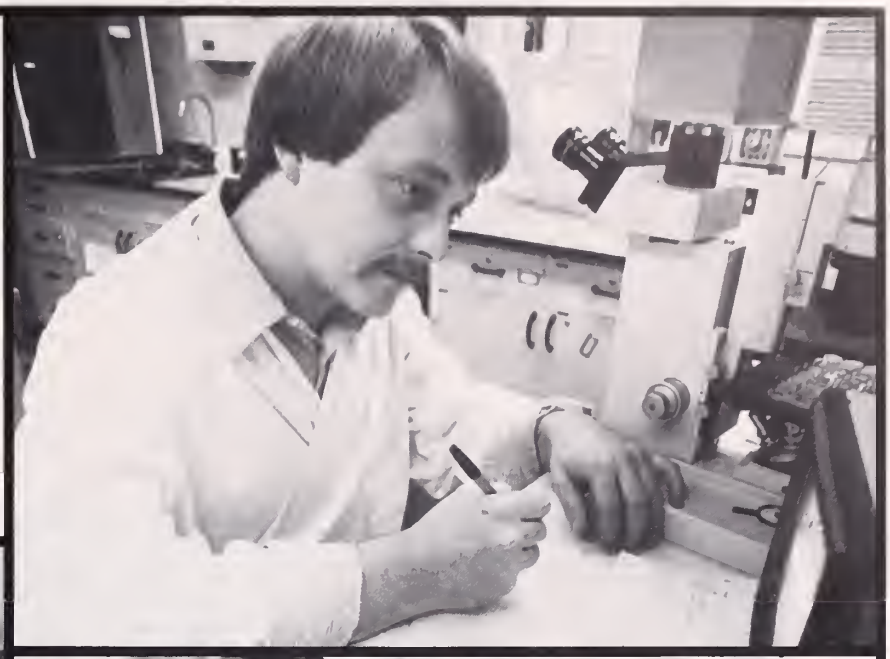
The city of Baltimore is a thriving shipping port. But to remain so, it must dredge its harbor to allow large commercial vessels to pass into and out of the port.

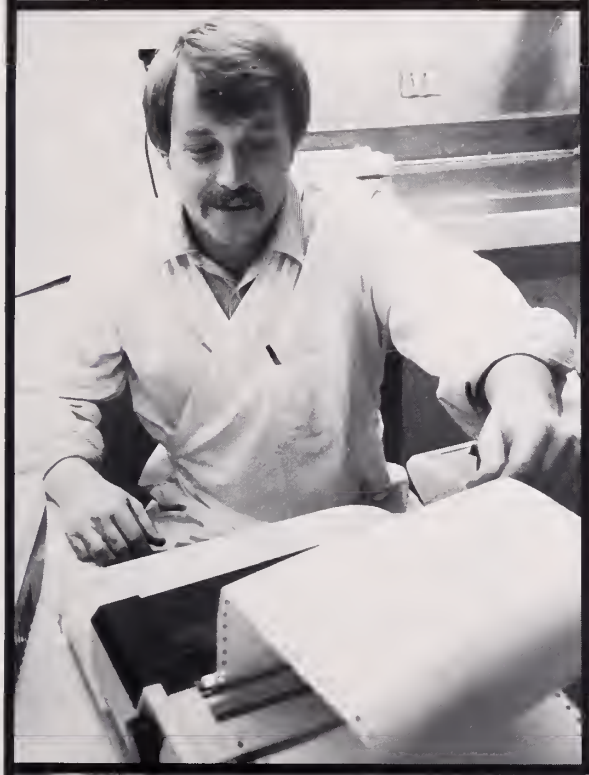
The problem? These dredged materials must be stored somewhere and much of the material is suspected of containing potentially harmful heavy metals.

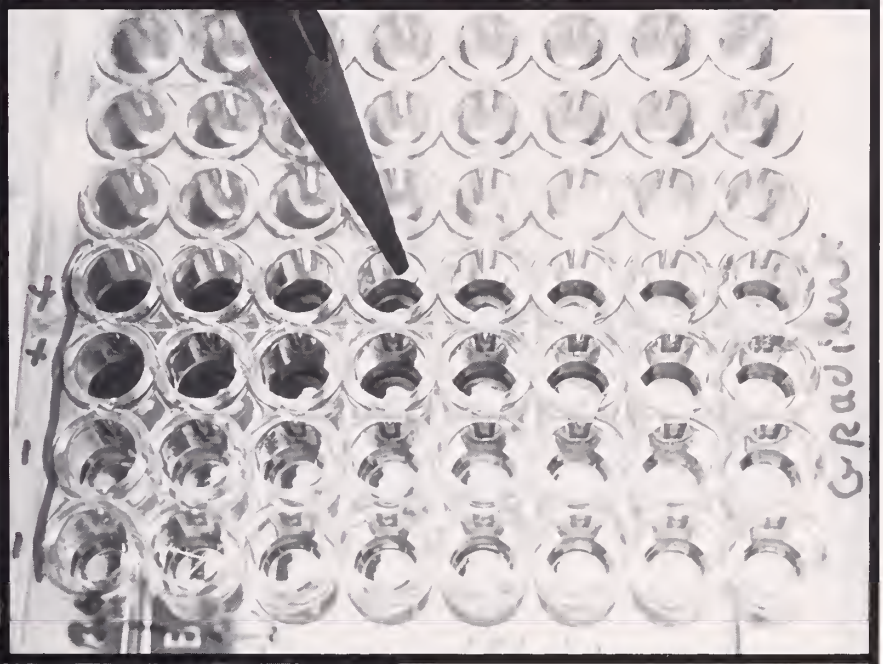
Soils scientists found that their project has the potential to turn a problem into a promising activity. On wasteland adjacent to Baltimore Harbor, these scientists discovered that some species of plants, such as turfgrass, grow well on harbor dredged material in spite of the presence of heavy metals. It may provide an opportunity for a recreational or wildlife habitat where none could have existed before.

The results of their study, partially funded by the Maryland Port Administration, will provide useful information on environmental impacts as the city contemplates large-scale dredging operations.

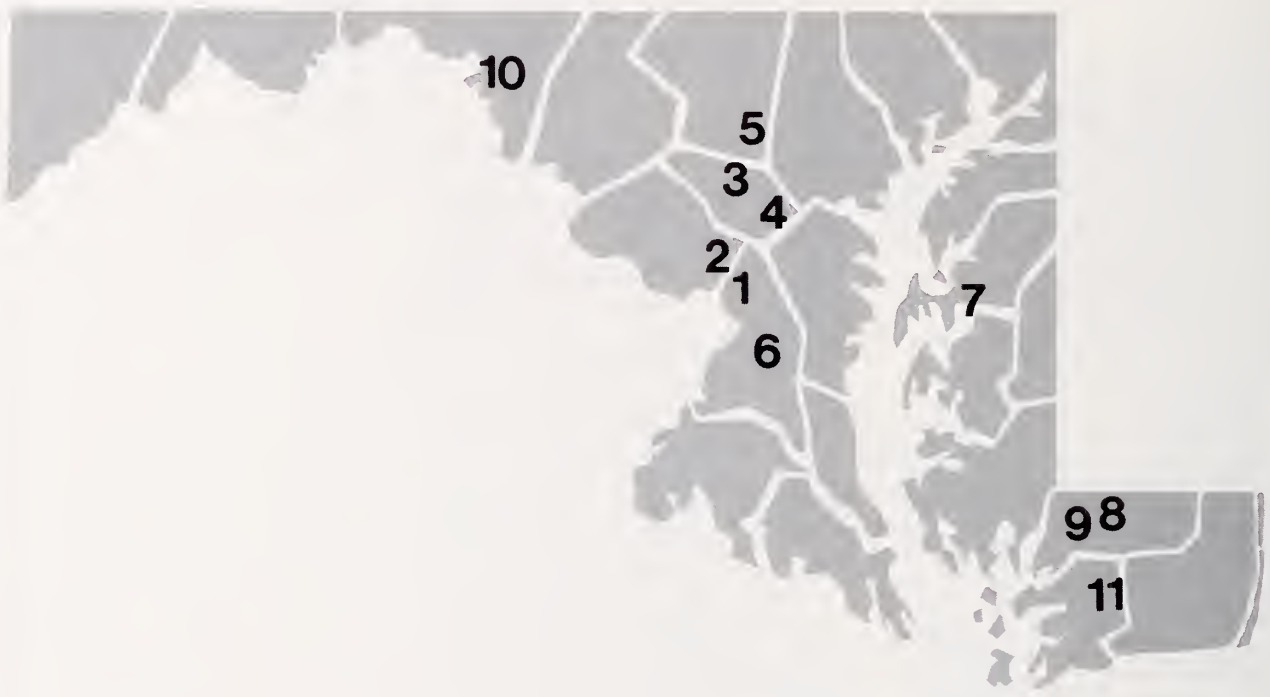
Maryland veterinary scientists are using a new immunological process to help them identify tomorrow's potential vaccines which will help prevent animal disease. Monoclonal antibodies are the result of this process. They are products of refined hybrids of short-life antibody cells, fused with long-life myeloma, or cancer-like, cells. The fact that monoclonal antibody hybrids combine the disease detection characteristics or antibody production of one parent with the immortality of another parent makes them ideal for scientists in their work to distinguish between the subtle variations of a single disease entity. Maryland scientists are coupling production of monoclonal antibodies with a rapid disease detection system they have developed called enzyme-linked immunosorbent assay which can be used for "flock profiling". Scientists say the system can help agricultural producers find and weed out crippling diseases before they have a chance to consume an entire flock or herd.







Maryland's Research Farms



With a blend of basic and applied research, Maryland Agricultural Experiment Station scientists provide a continuing flow of new knowledge essential to the solution of the practical problems facing farmers today. The Experiment Station carries out its research programs at field stations located across the state, reflecting the regional differences of Maryland farming.

Visitors are welcome at the Experiment Station research centers. In some instances, visits to facilities are restricted because of requirements of specific research projects. Interested parties should contact the research center directly to set up a meeting or for specific information on location and hours of operation.

1

University of Maryland College Park
MAES Headquarters (301) 454-3707
Research work in all phases of agriculture and related fields.

2

Plant Research Farm (Montgomery county)
Research on turfgrass, insects, truck crops and small fruit. 265 acres. (301) 572-7247 — Agronomy; (301) 572-5339 — Horticulture.

3

Agronomy — Dairy Research Farm (Howard county)
Studies of dairy nutrition and management and pollution abatement practices. 922 acres. (301) 531-3211.

4

Horse Research Center (Howard county)
Research on physiology, nutrition and management of horses. 154 acres. (301) 465-3760.

5

Beef Research Center (Carroll county)
Research concerning livestock production and management. 715 acres. (301) 795-1310.

6

Tobacco Research Farm (Prince George's county)
Research relating to tobacco breeding, production, harvesting and curing. 206 acres. (301) 627-3273.

7

Wye Research and Education Center (Queen Anne's county)
Work on plant breeding, weed and disease control, and production systems for corn, soybeans, vegetables and ornamentals. 123 acres. Additional research in cooperation with Wye Institute. 355 acres. Work with Wye Angus herd. Approximately 475 acres on Wye Plantation. (301) 827-6202 — Center Headquarters.

8

Salisbury Research Substation (Wicomico county)
Experimental studies dealing with poultry and breeding, insect, pest and disease control, production systems and management and processing of vegetable crops. 89 acres. (301) 742-8788 — Horticulture; (301) 749-9539 — Poultry Science.

9

Poplar Hill Research Farm (Wicomico county)
Studies of disease control, breeding, pest control and production systems for corn, soybeans and vegetable crops. 166 acres. (301) 742-9694.

10

Sharpsburg Research and Education Center (Washington county)
Research on fruits, vegetables, ornamentals, field crops, soils and disease and insect control. 546 acres. (301) 791-2298.

11

University of Maryland Eastern Shore
MAES 1890 Agricultural Research Program
Research work in human nutrition, pest control and cultural practices for soybeans and corn, small farm development, child development. (301) 651-1598.

Financial Statement 1981-82

Expenditures by Major Research Program Areas

	Percentage	Amount
Natural Resources & Forestry	16	$1,178,161
Plants & Crops	36	2,650,861
Animals & Poultry	24	1,767,241
Economics & Rural Life	13	957,256
General Resource Technology	11	809,985
TOTAL	100	$7,363,504

Sources of Income (State FY 1982)

State Appropriations	$4,657,684
Farm Sales	385,846
Federal Funds	
Hatch Formula Funds	1,508,699
Hatch Regional Research Funds	537,128
McIntire-Stennis (Cooperative Forestry Research) Funds	196,084
Animal Health, Sec. 1433 Funds	62,200
Rural Development - Title V Funds	15,863
TOTAL ALL FUNDS	$7,363,504

Scientific Articles and Publications 1981-82

The Maryland Agricultural Experiment Station was established to develop, conduct and disseminate research information. This knowledge is communicated to the agricultural community through Experiment Station miscellaneous publications and bulletins which reflect research findings. Experiment Station scientists frequently submit scientific articles to various professional journals. These articles reflect the Maryland Agricultural Experiment Station's reputation for research excellence.

The following section lists scientific articles and miscellaneous publications for 1981-82. Publications will be mailed free to all residents of the state who request them. Please address all requests to:

Agricultural Duplicating Services
2900 52nd Avenue
Hyattsville, MD 20781

Administration

Scientific Articles

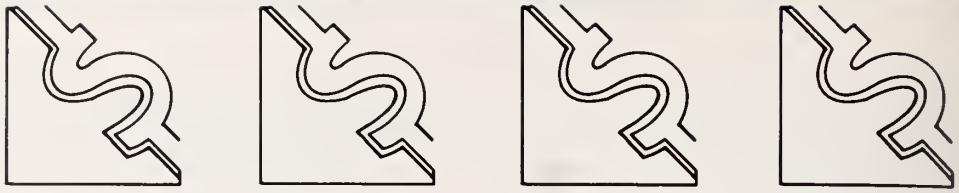
Linear Progamming Models for the Determination of Palatable Human Diets in Egypt. F. Bender, N. Waly.	**A3272**
The Impact of Mechanization in Multiple Cropping Systems. E. Tragakes, F. Bender.	**A3273**

Agricultural and Extension Education

Scientific Articles

Relationships Among FFA Membership Factors and Vo-Ag Programs in the Eastern FFA Region. E.L. Cooper, C.L. Nelson. Eighth National Agricultural Education Research Meeting, December 1981.	**A3058**
Wilderness: East is East and West is West. M.P. Donnelly, J.J. Vaske, F.R. Kuss. **Appalachia Journal** (December 1981): 123-127.	**A3166**
Case Studies of Six Rural Maryland Communities: Issues of the 1970's. E.H. Owen, J.W. Longest. Paper presented at the annual Rural Sociology Meeting, San Francisco, California, September 1-4, 1982.	**A3334**
The Effects of Change in Census Definitions on Longitudinal Analysis. D.L. Tweed. Annual meeting of the Southern Regional Demographic Group, Greensboro, North Carolina, October 1982.	**A3335**
Mental Health Need Assessment: Using Predicted Psychiatric Episode Rates. D. Jackson, D.L. Tweed, H. Goldsmith, B. Rosen, H. Babigian. In **Social Indicators for Human Service Systems** (Roger A. Bell, et al, eds.), Department of Psychiatry and Behavioral Sciences, School of Medicine, University of Louisville, Louisville, Kentucky, 1982, pp. 80-96.	**A3336**
Recreationist-Defined Versus Researcher-Defined Similarity Judgments in Substitutability Research. J.J. Vaske, M.P. Donnelly, D.L. Tweed. **Journal of Leisure Research.**	**A3337**

Agricultural and Resource Economics



Scientific Articles

Estimating the Impact of Beef Import Restrictions in the U.S. Import Market. R.G. Chambers, R.E. Just, L.J. Moffitt, A. Schmitz. **Australian Journal of Agricultural Economics.** **A3043**

On the Power of Macroeconomic Linkages. B. Gardner. **American Journal of Agricultural Economics.** **A3049**

An Evaluation of Potential Export Markets for Selected U.S. Fish Products. N.L. Anders, V.J. Norton, I.E. Strand, Jr. **Sea Grant Report.** **A3135**

A Generalized Soil Rent Model for Timber Production. I.W. Hardie, J.N. Daberkow, K.E. McConnell. **A3152**

An Economic Analysis of Technology in the Meat Products Industry. V.E. Ball, R.G. Chambers. **American Journal of Agricultural Economics.** **A3165**

Future Land Use Decisions: Timber vs. Agriculture. I. Hardie, K.E. McConnell. Paper presented at the American Agricultural Economics Association meeting. **American Journal of Agricultural Economics** (abstract), December 1982. **A3190**

Existence and Bequest Values. K.E. McConnell. In **Managing Air Quality and Visual Resources at National Parks and Wilderness Areas,** (Rowe and Chestnut, eds.) Westview Press, 1983. **A3196**

Harvesting and Nonconsumptive Wildlife Recreation Decisions. M.J. Hay, K.E. McConnell. **A3204**

Farmland Prices and the Return: An Application of Causality Testing. T.T. Phipps. Paper presented at the August 1982 meeting of the American Agricultural Economics Association. **A3228**

Land Value Research Issues. T.T. Phipps. Proceedings of the Land Values Workshop, Lincoln Institute. **A3229**

The Maryland Agricultural Land Preservation Foundation. T.T. Phipps. Paper presented at the Land: Renewable Resources, Institutions, and Use Conference. **A3230**

Landowner Incentives to Participate in a Purchase of Development Rights Program with Application to Maryland. T.T. Phipps. **NAEC Journal.** **A3231**

Participation in the Farmers Owned Reserve Program: A Discrete Choice Model. R.G. Chambers, W.E. Foster. **American Journal of Agricultural Economics.** **A3247**

To Dual or Not to Dual: Is That the Question? R.G. Chambers. **Western Journal of Agricultural Economics.** **A3270**

An Economic Model of Soil Conservation. K.E. McConnell. **American Journal of Agricultural Economcs.** **A3278**

Estimating Parameters of a Renewable Resource Model Without Population Data. R.G. Chambers, I.E. Strand, Jr. **American Journal of Agricultural Economics.** **A3285**

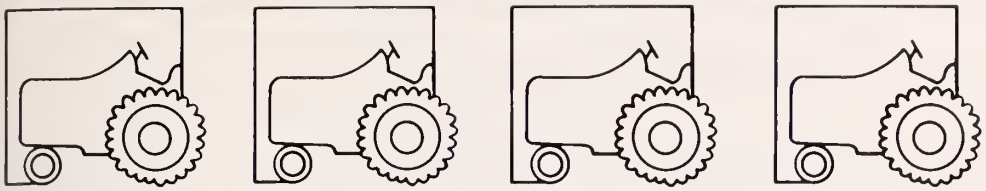
Pricing as a Policy to Reduce Sewage Costs. M. Strudler, I.E. Strand, Jr. **Water Resources Research.** **A3300**

Measuring the Cost of Time in Recreation Demand Analysis: Reply. K.E. McConnell, I.E. Strand, Jr. **American Journal of Agricultural Economics.** **A3301**

Miscellaneous Publications

Socio-Economic Factors and Land Use in Selected Maryland Counties. N.W. Bliven, B.V. Lessley. **973**

Economics of Alternative Irrigation Systems on Row Crop Production on the Eastern Shore of Maryland. S.M. Huete, B.V. Lessely, G.A. Stevens. **977**



Agricultural Engineering

Scientific Articles

Important Parameters in Soil Moisture Simulation by USDAHL. L. Wanchoo, M. Yaramanoglu. Winter meeting of the American Society of Agricultural Engineers. **A3086**

Holtan's Infiltration Equation Expressed as a Function of Time. M. Yaramanoglu. Winter meeting of the American Society of Agricultural Engineers. **A3087**

Biological Treatment of Crab Processing Effluent Using UV Disinfection. E.L. Gieger, F.W. Wheaton, R.B. Brinsfield, J.E. Alleman. American Society of Agricultural Engineers meeting. **A3200**

Effect of Temperature and Holding Time on Energy Required to Process UHT Milk. D.I. Chandarana, B.C. Frey, L.E. Stewart, J.F. Mattick. American Society of Agricultural Engineers meeting. **A3201**

Engineering Study of the Chesapeake Bay Soft-Shell Clam (**Mya arenaria**) *Industries.* F.W. Wheaton, G.U. Schaffer, A.L. Ingling, L.W. Douglass. American Society of Agricultural Engineers meeting. **A3207**

A Microcomputer Based Airways Resistance Measurement System. J.N. Hochheimer, A.T. Johnson, M. Yaramanoglu. American Society of Agricultural Engineers meeting. **A3210**

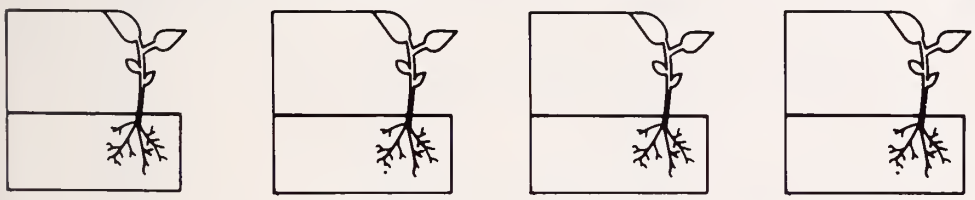
Mixed Convective Heat Loss from Spheres. A.T. Johnson, G.D. Kirk. American Society of Agricultural Engineers meeting. **A3211**

Litter Treatment Effect on Broiler Environment. L. Carr, J.L. Nicholson, J.P. Donohoe. American Society of Agricultural Engineers meeting. **A3212**

Crawfish Culture Systems in the Southern United States. T.B. Lawson, F.W. Wheaton. American Society of Agricultural Engineers meeting. **A3213**

Utilizing Landsat Digital Data for Operating Two Hydrologic Models. H. Moyseenko, M. Yaramanoglu, L. Wanchoo. Auto-Carto 5, International Society of Photogrammetry and Remote Sensing. **A3276**

Low Cost Wind Power System. B. Brill, A. Farsaie, G.L. Smith. **Transaction of the American Society of Agricultural Engineers.** **A3305**



Agronomy

Scientific Articles

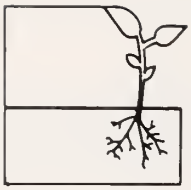
Environmental Influence on Weather Fleck Ratings for Maryland Tobacco Cultivars. M.K. Aycock, Jr. **Crop Science** 22 (1982): 131-133. **A2907**

Ozone Effects on the Dynamics of Early Growth of Maryland Tobacco Cultivars. Mulchi, C.L., M.K. Aycock. **Tobacco Science** 26 (1982):13-16. **A2926**

Field Comparison of the Nitrogen-15 and Difference Methods of Measuring Nitrogen Fixation. H.J. Talbott, W.J. Kenworthy, J.O. Legg. **Agronomy Journal** 74 (1982):799-804. **A3037**

Physiology of Root-Associated Nitrogenase Activity in **Oryza sativa.** P. van Berkum, C. Sloger. **Plant Physiology.** **A3056**

Registration of Maryland 341 Tobacco. H.A. Skoog, M.K. Aycock, Jr. **Crop Science** 22 (1982):689. **A3059**



Variations Among Isolates of **Corticum Fuciforme.** J.V. Cahill, N.R. O'Neill, P.H. Dernoeden. **Phytopathology** 72 (abstract):932. **A3062**

Single Versus Repeat Application of Preemergence Crabgrass Herbicides Using Reduced Rates the Second Year. P.H. Dernoeden. **Proceedings of the Northeast Weed Science Society**, 1982, pp. 315-320. **A3063**

Control of Various Broadleaf Weeds in Turf Using Experimental and Commercial Herbicides. P.H. Dernoeden, A.S. Nash. **Proceedings of the Northeast Weed Science Society**, 1982, pp. 321-325. **A3064**

Effect of Growth Retardants Applied Three Successive Years to a Kentucky Bluegrass Turf. P.H. Dernoeden. **Proceedings of the Northeast Weed Society**, 1982, pp. 336-343. **A3065**

Effectiveness and Persistence of Oxadiazon as a Preemergence Crabgrass Herbicide and Subsequent Effects on Overseed Perennial Ryegrass. A.S. Nash, P.H. Dernoeden. **Proceedings of the Northeast Weed Science Society**, 1982, pp. 301-306. **A3066**

Enumeration and Localization of N_2-Fixing Bacteria Associated with Roots of **Spartina alterniflora** *Loisel.* G. McClung, R.E. Davis, C. Sloger, P. van Berkum. **Plant Physiology.** **A3077**

Gene Effects for Weather Fleck in **Nicotiana Tabacum.** M.K. Aycock, Jr. **Canadian Journal of Genetics and Cytology.** **A3090**

Selective Adsorption of Nitrate and Nitrite from Tobacco Leaves. P.R. Rhodes, J.A. Saunders. **Beitrage Zur Tabakforschung International.** **A3091**

Registration of Severn Wheat. D.J. Sammons, J.W. Johnson. **Crop Science** 22 (December 1982): 1264-1265. **A3101**

Rapid Method for Determining the Adsorption of ^{63}Ni to Kaolinite. J.S. Angle. **Soil Science Society of America Journal.** **A3115**

Effect of Composted Municipal Sludge on Growth and Elemental Composition of White Pine and Hybrid Poplar. M.S. McIntosh, K.R. Brandt, J.E. Foss, R. Darmody. **Journal of Environmental Quality.** **A3118**

Identification of Source Materials for Acid Leachates in the Maryland Coastal Plain. D.P. Wagner, D.S. Fanning, F.E. Foss. Transportation Research Board 1982 Symposium on Leachates from Excavations and Fills. **A3123**

Leaflet Expansion Rates for Sixteen Soybean Cultivars. W.J. Wiebold, W.J. Kenworthy. **Agronomy Journal.** **A3124**

Effects of Municipal Sewage Sludge Compost Addition on Some Soil Properties in Tree Nursery Experimental Plots. R.G. Darmody, M. McIntosh, J.E. Foss, D.C. Wolf. **Soil Science.** **A3134**

Nitrogen-15 Field-Plot Studies of Soybeans I. Nitrogen Fixiation, and Seed Yield. H. Talbott, W.J. Kenworthy, J.O. Legg, L.W. Douglass. **A3149**

Analysis of Combined Experiments. M.S. McIntosh. **Agronomy Journal.** **A3167**

Nitrogen-15 Field-Plot Studies of Soybeans II. Nitrogen and Dry-Matter Accumulation in Nodulating and Nonnodulating Genotypes. H. Talbott, W.J. Kenworthy, J.O. Legg. **A3168**

Interrelationships Between Fertility and Red Thread Disease. J.V. Cahill, J.J. Murray, N.R. O'Neill, P.H. Dernoeden. **Plant Disease.** **A3195**

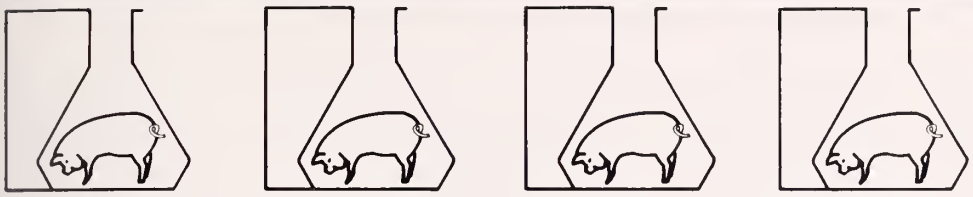
Measurement of Available Soil Phosphorus Under Conventional and No-Till Management. H.M. Kunishi, V.A. Bandel, F.R. Mulford. **Communications in Soil Science and Plant Analysis.** **A3202**

Nitrification Inhibition by Nitrapyrin and Terrazole in Sewage Sludge Compost Amended Soils. G. McClung, J.E. Foss, D.C. Wolf. **Soil Science Society of America Journal.** **A3209**

Occurrence of Gaeumannomyces Patch Disease in Maryland and Growth and Pathogenicity Tests with isolates of the Causal Agent. P.H. Dernoeden, N.R. O'Neill. **Plant Disease Journal.** **A3216**

Miscellaneous Publications

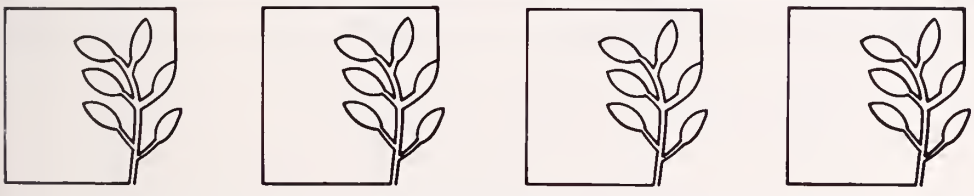
Performance of Maryland Tabacco Varieties and Breeding Lines, 1979 and 1980. M.K. Aycock, Jr., H.A. Skoog, E.K. Menchey, C.G. McKee, J.H. Hoyert, C.L. Mulchi. **970**



Animal Science

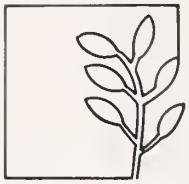
Scientific Articles

Miscellaneous Publications



Botany

Scientific Articles



Tricyclazole, Pyroquilon, Rabcide, Blastin, Coumarin and Related Compounds Inhibit Melanization and Epidermal Penetration by **Pyricularia oryzae.** C.P. Woloshuk, H.D. Sisler. **Journal of Pesticide Science** 7 (1982):161-166. **A3096**

A Sterol C-14 Demethylation Deficient Mutant of **Ustilago maydis:** *Characteristics and Sensitivity to Inhibitors of Ergosterol Biosynthesis.* R. Walsh, H.D. Sisler. **Pesticide Biochemistry and Physiology** 18 (1982):122-131. **A3110**

Distributional and Nomenclatural Notes on the Flora of the Texas Coastal Bend. S.R. Hill. **Sida.** **A3111**

The Demoulin Rule and Newly Mandated Combinations in **Eriogonum** *(Polygonaceae).* J.L. Reveal. **Taxon.** **A3112**

Pulchranthus *(Acanthaceae), a New Genus From Northern South America.* V.M. Baum, J.L. Reveal, J.W. Nowicke. **Systematic Botany.** **A3113**

Comments on the Typification of Two Linnaean Species of **Phlox** *(Polemoniaceae).* J.L. Reveal, C.R. Broome, M.L. Brown, G.F. Frick. **Taxon,** November 1982. **A3114**

The Termination of the Taxon Superorder: A Proposal. J.L. Reveal, H.G. Bedell. **Taxon.** **A3116**

Euonymus Chlorotic Ringspot Disease Caused by Tomato Ringspot Virus. C.W. Puffinberger, M.K. Corbett. **Phytopathology.** **A3125**

New Species and Combinations in **Odontonema** *Nees ex Kuntze (Acanthaceae).* V.M. Baum. **Brittonia,** December 1982. **A3126**

Redescription of **Heterodera zeae** *With SEM Observations and Illustrated Keys to the Cyst-Forming Genera and Species of Heteroderidae in the Western Hemisphere with Species Morphometrics and Distribution.* R.H. Mulvey, A.M. Golden. **Journal of Nematology.** **A3127**

Rapidly-Secreting, Cultured Oat Cells Serve as a Model System for the Study of Cellular Exocytosis. P.A. Conrad, L.L.W. Binari, R. Racusen. **Protoplasma** 112:196-204. **A3128**

Effects of Paraquat, Carbaryl, and Captan on **Sporidesmium sclerotivorum** *and its Mycoparasitic Activity in Soil.* S.M. Sherren, W.L. Klarman. **Plant Disease.** **A3130**

Fatty Acid Compositions of **Caenorhabditis elegans** *and* **C. briggsae.** P.A. Hutzell, L.R. Krusberg. **Comparative Biochemistry and Physiology** 73B:517-520. **A3133**

Ergosterol Biosynthesis: A Target of Fungitoxic Action. H.D. Sisler, R.C. Walsh, V. Ziogas. **Proceedings of the 5th International Congress of Pesticide Chemistry.** **A3137**

Chemical and Physical Methods in the Analysis of Plant Sterols. G.W. Patterson. Paper presented at the Symposium on Biochemistry and Function of Isopentenoids in Plants. **A3140**

A Solar Thermoconvective Plant Drier. Q.P. Sinnot. **Taxon.** **A3141**

A New Proposal to Conserve 8037 **Odontonema** *(Acanthaceae).* V.M. Baum, J.L. Reveal. **Taxon.** **A3150**

Amended Outlines and Indices for Six Recently Published Systems of Angiosperm Classification. H.G. Bedell, J.L. Reveal. **Phytologia** 51:65-156. **A3155**

Winged Bean Protoplasts: Isolation and Culture to Callus. A.E. Cuddihy, P.J. Bottino. **Plant Cell, Tissue and Organ Culture.** **A3160**

Microwave and the Herbarium Specimen: Potential Dangers. S.R. Hill. **Taxon.** **A3162**

Severity of Phytophthora Root Rot on Nodulated and Non-Nodulated Soybeans. J.E. Beagle, J.F. Rissler. **A3164**

Rhoeo Discolor *Mosaic Caused by a Strain of Tobacco Mosaic Virus.* S.M. Thompson, M.K. Corbett. **Plant Disease.** **A3175**

Histopathology of Susceptible and Resistant Soybean Roots Inoculated with Zoospores of **Phytophthora Megasperma** *f. sp.* **glycinea.** J.E. Beagle, J.F. Rissler. **A3197**

A New Population of Shenandoah Wake Robin. N.L. Bodkin, J.L. Reveal. **Castanea.** **A3199**

Occurrence of **Aspergillus** *Spp. and Aflatoxins in Commercial Mushroom Compost.* J.S. MacFall, G.A. Bean, K.L. Deahl. **Journal of Food Technology.** A3217

Heavy-Metal Salt Susceptibility of Spiroplasmas **In Vitro.** S.C. Whitmore, J.F. Rissler, R.E. Davis. **Antimicrobial Agents and Chemotherapy.** A3246

Effect of Pyridazinone Herbicides on Growth and Aflatoxin Production by **Aspergillus flavus** *and* **Aspergillus parasiticus.** G.A. Bean, A. Southall. A3260

Action of the Antipenetrant, Tricyclazole on Appressoria of **Pyricularia oryzae.** C.P. Woloshuk, H.D. Sisler, E.L. Vigil. **Physiological Plant Pathology.** A3263

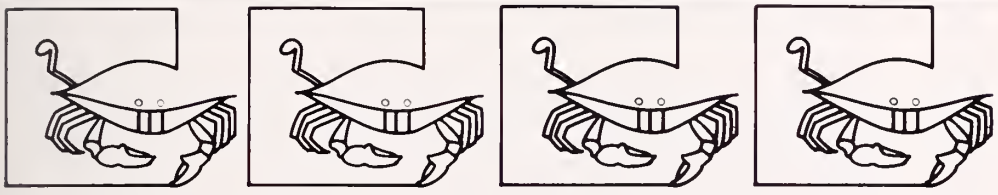
Effects of Ultraviolet-B Irradiation on Plants During Mild Water Stress. II. Effects on Diurnal Stomatal Resistance. A.H. Teramura, M. Tevini, W. Iwanzik. **Physiologia Plantarum.** A3277

Proposal to Conserve the Name **Lycopersicon esculentum** *Miller.* E.C. Terrell, C.R. Broome, J.L. Reveal. **Taxon.** A3283

A Synoptical Review of a Revised Classification of Liliopsida (Magnoliophyta) as Proposed by Dahlgren and Clifford. H.G. Bedell, J.L. Reveal. **Phytologia,** November 1982. A3294

Ecological Consequences of Human-Caused Extinctions. F.M. Heller. A3295

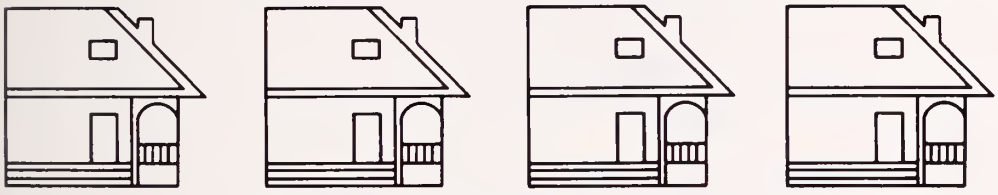
Effect of Inhibitors of Melanin Biosynthesis on Structure and Function of appressoria of **Colletotrichum lindemuthianum.** P.M. Wolkow, H.D. Sisler, E.L. Vigil. A3304



Center for Environmental and Estuarine Studies

Scientific Articles

Black Locust **(Robinia pseudoacacia)** *Tree and Stand Variables Affecting Attack by the Locust Borer* **(Megacyllene robinia).** D.M. Harman, K.R. Dixon, P. Rudolf. Memoir, Entomological Society of Canada. A3102



College of Human Ecology

Scientific Articles

The Impact of Demographic Variables on Expenditures for Food Away from Home. F.W. Derrick, R. Dardis, A. Lehfeld. **Journal of the Northeastern Agricultural Economic Council** XI (Spring 1982): 1-11. A3132

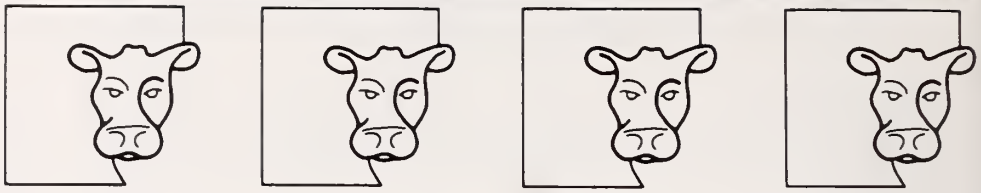
Consumer Risk Perception and Risk Response. R. Dardis. Paper presented at the 1982 American Council on Consumer Interests Conference, Columbus, Ohio, April 22, 1982. A3142

Benefit-Cost Analysis of the Cotton Dust Regulation. R. Dardis, I. Block, D. Maness. **Textile Research Journal** 52 (June 1982): 380-388. A3169

The Impact of Two Potential Flammability Standards on Adult Sleepwear and Dresses. S.M. Spivak, R. Kaufman, D. Batra. **Journal of Consumer Product Flammability** 9 (June 1982):66-76. A3174

Risk-Benefit Analysis and the Determination of Acceptable Risk. R. Dardis, G. Davenport, J. Kurin, J. Marr. **Journal of Consumer Affairs.** A3284

Dairy Science



Scientific Articles

Microbiology of UHT Milk. D.C. Westhoff. **Journal of Dairy Science** 64:167-173. **A2636**

Characterization of **Bacillus** *Species Isolated From Spoiled UHT Processed Milk.* D.C. Westhoff, S.L. Dougherty. **Journal of Dairy Science** 64:570-572. **A2822**

Storage Study of Commercially Pasteurized Milk. D.C. Westhoff. **Journal of Food Quality** 4 (1982):157-164. **A2856**

Heat Resistance of **Sporolactobacillus inulinus.** S. Doores, D.C. Westhoff. **Journal of Food Science** 46:810-812. **A2841**

Associative Growth of Lactic Acid Bacteria in Cabbage Juice. F. Yildiz, D.C. Westhoff. **Journal of Food Science** 46:962-963. **A2860**

Effect of Phagocytosed Fat and Casein on the Intraphosgosomal pH in Bovine Polymorphonuclear Leukocytes. D.M. Reinitz, M.J. Paape, I.H. Mather. **Proceedings of the Society for Experimental Biology and Medicine** 170 (1982):281-285. **A3051**

Production and Characterization of Monoclonal Antibodies to Bovine Immunoglobulin G_2. S. Srikumaran, A.J. Guidry, R.A. Goldsby. **American Journal of Veterinary Research** 43 (1982):21-25. **A3068**

Effects of Sodium Bicarbonate on Palatability and Voluntary Intake of Concentrates Fed Lactating Dairy Cows. R.A. Erdman, L.W. Douglass. **Journal of Dairy Science** 65 (1982):1647-1651. **A3070**

Biosynthesis of Mammary Glycoproteins: Structural Characterization of Different Isomers of Lipid-Linked Octa-, Nona-, and Decasaccharide. I.K. Vijay, G.H. Perdew. **Archives of Biochemistry and Biophysics.** **A3072**

Peripartum Plasma Estradiol-17-Beta and Progesterone Concentrations and Postpartum Uterine Motility in Dexamethasone Treated Cows. L.R. Martin, W.F. Williams, E. Russek, T.S. Gross. Paper Presented at the annual meeting of the American Society for Animal Production. **Journal of Animal Science** 52 (1981 supplement):286. **A3074**

In-Vivo *and* **In-Vitro** *Progesterone Response to Post-Partum HCG.* T.S. Gross, W.F. Williams, G. Saperstein, M.A. Haaland. Paper presented at the annual meeting of the American Society for Animal Science, 26-29 July 1981. **A3075**

Bovine Placental Prostaglandin Synthesis at Parturition. W.F. Williams, T.S. Gross. Paper presented at the annual meeting of the American Society for Animal Science, 26-29 July 1981. **A3076**

Mastitis: III. Effect of pH, Temperature and Emollients on the Disinfecting Action of N, N-dimethyldodecanamine. P.A. Turck, J. Bitman, M.J. Thompson. **Journal of Dairy Science** 65 (1982):1987-1992. **A3079**

Biosynthesis of Mammary Glycoproteins. Structural Characterization of Lipid-Linked Glycosyloligosaccharides. I.K. Vijay, G. Perdew. **European Journal of Biochemistry** 126 (1982):167-172. **A3081**

Selective Method for the Isolation of **Sporolactobacillus** *from Food and Environmental Sources.* S. Doores and D.C. Westhoff. **Journal of Applied Bacteriology.** **A3084**

Characterization of a New Isomer of Lipid-Linked Heptasaccharide Formed During **In Vitro** *Biosynthesis of Mammary Glycoproteins.* I.K. Vijay, G.H. Perdew. **Journal of Biological Chemistry** 139 (1982):321-324. **A3085**

Function of Endomembranes and the Cell Surface in the Secretion of Organic Milk Constituents. I.H. Mather, T.W. Keenan. **Biochemistry of Lactation.** **A3104**

Sequential Response of Milk Leukocytes, Serum Albumin, Immuno-Globulins, Nomovalent Ions, Citrate and Lactose Following Infusion of **Escherichia coli** *endotoxin into the Bovine Mammary Gland.* A.J. Guidry, M. Ost, I.H. Mather, W.E. Shainline, B.T. Weinland. **A3136**

A New Fluorescent Tag for Labeling of Saccharides. C. Prakash, I.K. Vijay. **Analytical Biochemistry.** **A3153**

Characterization of Intermediates up to Lipid-Linked Heptasaccharide Implicated in the Biosynthesis of **Saccharomyces cerevisiae** *Mannoproteins.* C. Prakash, I.K. Vijay. **Biochemistry** 21 (1982):4810-4818. **A3154**

NHANES I Attributes Related to Adult Vitamin C and/or Calcium Nutritional Status. III. Vitamin C Intake and Its Association with Gingival Clinical Signs. M.F. Stanton, E. Russek, F.W. Lowenstein. **A3157**

NHANES I Attributes Related to Adult Vitamin C and/or Calcium Nutritional Status. II. Associations with Bone Cortical Thickness and Density. M.F. Stanton, L.W. Douglass, J.H. Soares. **A3158**

NHANES I Attributes Related to Adult Vitamin C and/or Calcium Nutritional Status I. Associations Among Dietary, Anthropometric, Biochemical, Demographic, and Clinical Variables. M.F. Stanton, F.W. Lowenstein, E. Russek. **A3159**

Plasma 13, 14-Dihydro-15-Keto-PGF$_2\alpha$ in Pregnant and Non-Pregnant Heifers Prior to and During Surgery and Following Intrauterine Injection of PGF$_2\alpha$. W.F. Williams, F.S. Lewis, W.W. Thatcher, C.S. Underwood. **A3163**

Influence of the Lactose Concentration of Milk and Yogurt on the Growth Rate of Rats. J. Broussalian, D. Westhoff. **Journal of Dairy Science.** **A3176**

Characterization of Intermediates up to Lipid-Linked Heptasaccharide Implicated in the Biosynthesis of **Saccharomyces cerevisia** *Mannoproteins.* C. Prakash, I.K. Vijay. **Biochemistry.** **A3206**

Rapid Analysis of **Trans** *Fatty Acids on SP-2340 Glass Capillary Columns.* J. Sampugna, L.A. Pallansch, M.G. Enig, M. Keeney. **Journal of Chromatography.** **A3208**

Failure of an Intra-Amniotic Injection of a Prostaglandin Synthatase Inhibitor to Cause Mid-Term Abortion in Cattle. W.F. Williams, T.S. Gross, J.E. Manspeaker. Paper presented at the 77th meeting of American Society of Animal Science and Canadian Society of Animal Science. **A3236**

Effect of Intramammary Device on New Infection Rate, Milk Yield and Milk Somatic Cell Counts in Maryland Dairy Herds. N.J. Corlett, R.P. Peters, M.J. Paape, W.D. Schultze. Paper presented at the 77th meeting of the American Dairy Science Association. **A3237**

Survey of Venezuelan White Cheese. I. Arispe, D.C. Westhoff. Paper presented at the 77th meeting of the American Dairy Science Association. **A3238**

The Effect of Reducing Agents on the Enumeration of **Lactobacillus bulgaricus.** V.G. Gapud, D.C. Westhoff. Paper presented at the 77th meeting of the American Dairy Science Association. **A3239**

Effects of Silage pH on the Voluntary Intake of Corn Silage. R.D. Shaver, R.A. Erdman, J.H. Vandersall. Paper presented at the 77th meeting of the American Society of Animal Science and Canadian Society of Animal Science. **A3240**

Effects of Dietary Choline on Milk Yield and Composition in Lactating Dairy Cows. R.A. Erdman, R.M. Shaver, J.H. Vandersall. Paper presented at the 77th meeting of the American Dairy Science Association. **A3241**

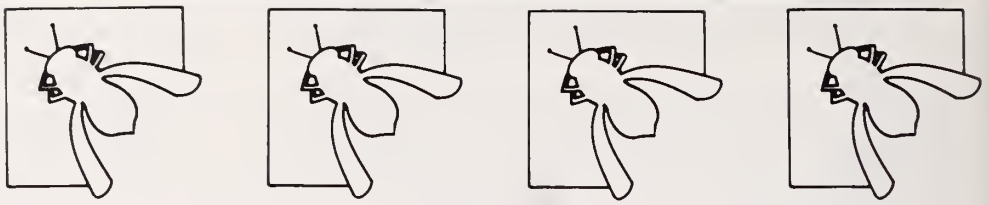
Reproductive Hormone and Prostaglandin Metabolite Profiles of Pregnant Cows Infected with the Abortifacient **Sarcocystis cruzi.** K.J. Lowe, W.F. Williams, R. Fayer, T.S. Gross. Paper presented at the 77th meeting of the American Dairy Science Association. **A3242**

Progesterone Clearance Rate in the Prepartum Cow. M.J. Margolis, W.F. Williams, T.S. Gross. Paper presented at the 77th meeting of the American Dairy Science Association. **A3243**

Influence of Lactose Concentration in Milk and Yogurt on the Growth Rate of Rats. J. Broussalian, D.C. Westhoff. Paper presented at the 77th meeting of the American Dairy Science Association. **A3248**

Characterization of Lipid-Linked Octa- through Undecasaccharide Implicated in the Biosynthesis of **Saccharomyces cerevisiae** *Mannoproteins.* C. Prakash, A. Katial, I.K. Vijay. **A3253**

Entomology



Scientific Articles

Some Trichoptera, Coleoptera and Hymenoptera from Iceland and Greenland. D.M. Messersmith. **Fauna norv.,** ser. B, 29 (1982):17. **A2585**

A Report on a Collection of Diptera from Iceland and Greenland. D.H. Messersmith. **Fauna norv.,** ser. B, 29 (1982):36-39. **A2753**

Circadian Rhythm of Gypsy Moth Adult Eclosion. M. Ma, M.E. Schnee, H.J. Gruenwald, R.E. Webb. **Annals of the Entomological Society of America** 75 (1982):411-417. **A3044**

An Analysis of Factors Affecting Honey Bee Queen Cell Acceptance and Development. A. Hynes, D.M. Caron. **A3045**

Poecilocrypticus formicophilus *Gebien, a South American Beetle Established in the United States (Coleoptera: Tenebrionidae).* W.E. Steiner, Jr. **Proceedings of the Entomological Society of Washington** 84 (1982):232-239. **A3055**

Pharmacokinetics of Diflubenzuron in Two Types of Chickens. J.C. Opdycke, R.E. Menzer. **A3057**

Multiple and Cross Resistance in a Field-Collected Strain of German Cockroach. J.O. Nelson, F.E. Wood. **Journal of Economic Entomology,** 1982. **A3061**

The Biological Assay of Insect Pathogens, Chapter 12. C.F. Reichelderfer. **Handbook of Naturally Occurring Pesticides, Volume I: Methods, Theory and Practice.** **A3089**

A Note of the Life History of Insects. J.C. Jones. **A3094**

Perching Behavior of **Canthon viridis** *(Coleoptera: Scarabaeidae) in Maryland.* O.P. Young. **Journal of the New York Entomological Society** 90 (1982):161-165. **A3107**

Analysis of Individual Gypsy Moth Sex Pheromone Production by Sample Concentrating Gas Chromatography. M. Ma, M.E. Schnee. **Experentia.** **A3117**

Host's Diet Effects on Nitrogen Utilization Efficiency for Two Parasitoid Species, **Brachymeria intermedia** *and* **Coccygominus turionellae.** J.A. Greenblatt, M.E. Montgomery, P. Barbosa. **Physiological Entomology** 7 (1982):263-267. **A3120**

Temperature Modification by Bags of the Bagworm, **Thyriodopteryx ephemeraeformis.** P. Barbosa, M.G. Waldvogel, N.L. Breisch. **A3121**

Plant Mediated Variation in Herbivore Suitability and Parasitoid Fitness. P. Barbosa. **Proceedings of the V International Insect-Plant Relations Symposium.** **A3122**

Association of Three Nantucket Pine Tip Moth Parasitoids Within the Crown of Loblolly Pine. J.H. Lashomb, A.L. Steinhauer. **Journal of the Georgia Entomological Society** 17 (1982):287-291. **A3129**

Evaluation of Diflubenzuron for Mexican Bean Beetle Control and Impact on **Pediobius foveolatur.** P.A. Zungoli, A.L. Steinhauer, J.J. Linduska. **Economic Entomology.** **A3147**

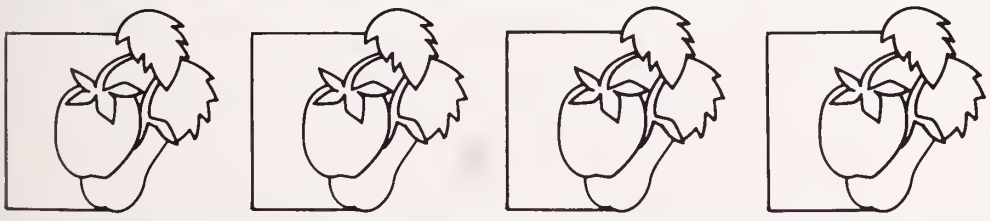
Tracking Variable Host Plants in Time and Space. R.F. Denno. **Variable Plants and Herbivores: Perspectives in Natural and Managed Systems.** **A3172**

The White Peach Scale, **Pseudaulacaspis pentagona** *(Targioni-Tozzetti): Evidence that Current Concepts Include Two Species.* J.A. Davidson, D.R. Miller, S. Nakahara. **A3188**

A New Species of Aphid, Genus **Monelliopsis,** *on Pecan.* T.L. Bissell. **Journal of the Georgia Entomological Society.** **A3191**

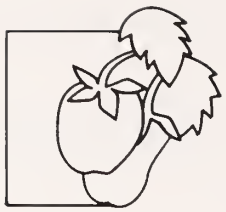
Analysis of Individual Gypsy Moth Sex Pheromone Production by Sample Concentrating Gas Chromatography. M. Ma, M.E. Schnee. **The Canadian Entomologists,** 1982. **A3219**

Miscellaneous Publications



Horticulture

Scientific Articles



Transplant Quality and Yield of Tomato, Muskmelon and Cabbage Grown in Media Containing Sewage Sludge Compost. S.B. Sterrett, C.W. Reynolds, F.D. Schales, L.W. Douglass, R.L. Chaney. **Journal of the American Society for Horticultural Science.** **A3048**

Effects of Metribuzin Placement on the Foliage of Tomato (**Lycopersicon esculentum**) *and Jimsonweed* (**Datura stramonium**). J.R. Frank, C.E. Beste. **Weed Science.** **A3050**

Poinsettia — The Christmas Flower. J.B. Shanks. **The Maryland Florist.** **A3060**

Using Composted Waste for Growing Horticultural Crops. F.R. Gouin. **Proceedings of the Biological Management of Industrial Wastes Symposium** and **Biocycle Journal of Waste Recycling** 23 (1982): 45-47. **A3067**

Inheritance of Resistance to Temperature-Drought Stress in Snap Bean (**Phaseolus vulgaris** *L.*). J.C. Bouwkamp, W.L. Summers. **Journal of Heredity.** **A3083**

Promotion of Seed Germination in Table Beet by an Aqueous Seaweed Extract. C.A. Wilczek, T.J. Ng. **HortScience** 17 (1982): 629-630. **A3092**

Head and Spread Apple Tree Training After A Dozen Years. A.H. Thompson. Paper presented at the annual meeting of the North Carolina Apple Growers' Association. **A3100**

The Small Apple Problem. A.H. Thompson, C.S. Walsh. Paper presented at the annual meeting of the Maryland, Pennsylvania and New Jersey Horticultural Societies, and **Pennsylvania Fruit News** 61 (1982): 50-51. **A3106**

Interspecific Hybrids of **Zinnia elegans** *Jacq. and* **Z. angustifolia** *HBK: Embryology, Morphology and Powdery Mildew Resistance.* T.H. Boyle, D.P. Stimart. **Euphytica** 31. **A3108**

Investigations of Interactions Between **Buxus sempervirens** *'Suffruticosa' and* **Pratylenchus penetrans** *and/or* **Paecilomyces buxi.** S. Sardanelli, C.B. Link. **Journal of American Society of Horticultural Science.** **A3109**

Ethylene Evolution and the Ripening of Thornless Blackberries. J. Popenoe, C.S. Walsh. **HortScience.** **A3119**

Extraction, Purification and Determination of Nucleotides in **Hedera helix** *Leaves by Thin Layer and High Pressure Liquid Chromatography.* T.W. Warman, T. Solomos. **Analytical Biochemistry.** **A3131**

Sulfur May Be an Important Supplement When Using Composted Sewage Sludge in Blending Potting Media. F.R. Gouin, C.B. Link. **Horizons of the Horticultural Research Institute.** **A3138**

Plant Competition in Strawberry Matted Rows. H.J. Swartz, C.S. Walsh, A.S. Frackelton, L. Douglass, G.J. Galletta. **Advances in Strawberry Production** 1 (1982): 10-15. **A3144**

The Inheritance of Several Fruit Characters in **Capsicum annuum,** *L.* R.N. McArdle, J.C. Bouwkamp. **Journal of Heredity.** **A3145**

Axillary and Adventitious Shoot Proliferation of Deciduous Azalea **in vitro.** I. Fordham, D.P. Stimart, R.H. Zimmerman. **HortScience** 17. **A3146**

Promotion and Inhibition of Branching in **Euphorbia pulcherrima** *Grafts Between Self-Branching and Nonbranching Cultivars.* D.P. Stimart. **Journal of the American Society for Horticultural Science.** **A3148**

Hydroponic and Soil Nutrition Studies of American and English Boxwood. M.W. Hefley, F.C. Stark. **Journal of the American Society for Horticultural Science.** **A3151**

Response of Spur Type "Delicious" Apples to Thinning Sprays of Naphthalene Acetic Acid and Carbaryl in Combination With Daminozide and Pesticides. B.L. Rogers, A.H. Thompson. **HortScience.** **A3161**

Population Density Effects on Sweet Potato (**Ipomoea batatas** *Lam.*) *Yield: A Brief Review.* J.C. Bouwkamp. **HortScience.** **A3192**

Annual Chill Unit Accumulation in the United States. H.J. Swartz, S.E. Gray. **Fruit Varieties.** **A3193**

Growth Regulation of Several Ornamental Crops With a Triazoline Derivative of Norbornenodiazetine (BAS 106). J.B. Shanks. **Proceedings of the Plant Growth Regulator Society of America.** **A3205**

Comparative Efficacy of ICI Compounds PP333 and PP296 on Selected Ornamental Plants. J.B. Shanks. **Proceedings of the 9th Annual meeting, Plant Growth Regulator Society of America.** **A3214**

Viability, Vigor and Electrolytic Leakage of Muskmelon Seeds Subjected to Accelerated Aging. E.L. Pesis, T.J. Ng. **HortScience.** A3215

Paulownia tomentosa*: Fertilization and Coppicing in the Establishment and Growth in a Plantation.* P.R. Beckjord, M.S. McIntosh. **Southern Journal of Applied Forestry.** A3223

Growth and Fungal Retention by **Quercus rubra** *Inoculated With Ectomycorrhizal Fungi and Planted on a Clearcut and Stripmine.* P.R. Beckjord, M.S. McIntosh. A3232

Growth and Fungal Retention by Field Planted **Quercus rubra** *Seedlings Inoculated with Several Ectomycorrhizal Fungi.* P.R. Beckjord, M.S. McIntosh. A3233

Field Inoculation of Containerized Loblolly Pine Seedlings with Basidiospore-Chips of Ectomycorrhizal Fungi. P.R. Beckjord, M.S. McIntosh, E. Hacskaylo. A3244

Effects of Nitrogen Fertilization and **Pisolithus tinctorius** *on* **Quercus rubra** *Seedling Roots.* P.R. Beckjord, D. Smith, M.S. McIntosh. A3245

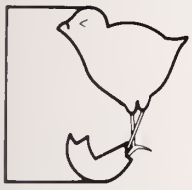
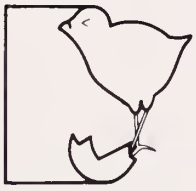
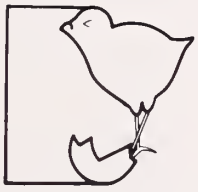
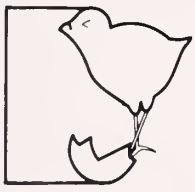
Continuous Extraction of Fruit and Vegetable Products. R.C. Wiley. **Food Techology.** A3262

Preconcentration of Apple Juice by Reverse Osmosis. M.J. Sheu, R.C. Wiley. **Journal of Food Science.** A3264

Effects of Nitrogen Fertilization on Growth and Ectomycorrhizal Formation of **Quercus Alba, Q. Rubra, Q. Falcata,** *and* **Q. Falcata** *Var.* **Pagodifolia.** P.R. Beckjord, J.H. Melhuish, M.S. McIntosh, E. Hacskaylo. A3275

Observations on the Interactions Between Cyanide-Resistant Respiration and Ethylene in Thick Banana Slices. M. Tucker, T. Solomos. **Plant Physiology.** A3280

On the Nature of the Terminal Respiratory Electron Acceptors in Sweet Potato Slices and Intact Roots. T. Solomos, M. Faust. **Plant Physiology.** A3293

Poultry Science

Scientific Articles

Available Carbohydrate in Cassava Meal Determined by Chick Bioassay. E.W. Agudu, O.P. Thomas. **Poultry Science** 61:1131-1136. A3053

Effect of Coccidiosis on Heart Composition and Function in Young Turkeys. P.C. Augustine, W.J. Kuenzel, O.P. Thomas. **Avian Diseases** 26(2):346-353. A3054

Effects of Holding Temperature and Storage Time on Respiratory Rate, Motility, and Fertility of Chicken and Turkey Semen. R.N. Clarke, T.J. Sexton, M.A. Ottinger. **Poultry Science** 61:1912-1917. A3069

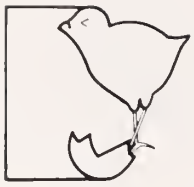
Toxicity of a Vitamin D Steroid to Laying Hens. J.H. Soares, Jr., D.M. Kaetzel, J.T. Allen, M.R. Swerdel. **Poultry Science.** A3103

The Effects of Dietary Cholecalciferol Steroids and Gonadal Hormone Implantation on Plasma 1,25-Dihydroxycholecalciferol and Bone Calcification in Female-Japanese Quail. D.M. Kaetzel, Jr., J.H. Soares, Jr. A3105

Precocious Puberty Effected in Male Turkeys Following Knife Cuts Directed to the Hypothalamus. W.J. Kuenzel, P.E. Lake. A3139

*Implication of Iron in Seizure Syndrome of Mutant Chicks (***Gallus domesticus***).* M.M. Beck, W.J. Kuenzel. **Comparative Physiology and Biochemistry A.** A3143

Sexual Differences in the Japanese Quail: Behavior, Morphology and Intracellular Metabolism of Testosterone. J. Balthazart, M. Schumacher, M.A. Ottinger. **General and Comparative Endocrinology.** A3171



Mutagenesis Testing of Acetyl-Tributylcitrate and Epoxidized Soybean Oil. J.L. Heath, M. Reilly. **Poultry Science.** **A3173**

Marinating Broiler Parts — The Use of a Viscous Type Marinade. R.C. Post, J.L. Heath. **A3194**

Age-Related Reproductive Decline in the Male Japanese Quail. M.A. Ottinger, M. Masson, C.S. Duchala. **Hormones and Behavior.** **A3218**

Effect of Dietary Copper on Litter Microbial Population and Broiler Peformance. E.L. Johnson, J.L. Nicholson, J.A. Doerr. **A3252**

Morphological Changes in Chicken and Turkey Spermatozoa Incubated Under Various Conditions. R.N. Clarke, M.R. Bakst, M.A. Ottinger. **A3266**

Short-Term Variation in Serum Luteinizing Hormone and Testosterone in the Male Japanese Quail. M.A. Ottinger. **A3286**

*The Developmental Distribution of Monoamines in the Brain of Male Japanese Quail (***Coturnix, coturnix japonica***).* C.S. Duchala, M.A. Ottinger, E. Russek. **A3292**

UMES

UMES UMES UMES UMES

Scientific Articles

Yield and Comparison of Nutritive and Energy Values: Pigs' Ears. M. Vaughn, D.P. Wallace, B.W. Forster. **Journal of Food Science** 44 (1979):1440-2,1454. **A3022**

Effect of Planting Dates and Soybean Cultivars on Pod Damage by Corn Earworm. J.M. Joshi. **Crop Science** 20 (1980):59-63. **A3023**

Interactions of Cultural Practices with Insect-Induced Stress On Soybeans. P.W. Wells, J.M. Joshi, G.P. Dively. **Soybean Genetics Newsletter** 8 (1981):82-84. **A3178**

The Effects of Microwave Heating on the Trypsin Inhibitor and Lipoxygenase Activity in Soybeans. Y.S. Hafez, M.E. McLellan, G. Singh. **Journal of Food Science.** **A3179**

The Presence of Non-Protein Trypsin Inhibitor in Soybeans. Y.S. Hafez. **Journal of Food Science,** 1983. **A3180**

Neurologistics: Theoretical and Evolutionary Perspectives. R.W. Thatcher. **Brain and Language** 11 (1980):235-260. **A3181**

Effects of Low Levels of Cadmium and Lead on Cognitive Functioning in Children. R.W. Thatcher, M.L. Lester, R. McAlaster, R. Horst. **Archives of Environmental Health** 37 (1982):159-165. **A3182**

Refined Carbohydrates Intake, Hair Cadmium Levels, and Cognitive Functioning in Children. M.L. Lester, R.W. Thatcher, L. Monroe-Lord. **Nutrition and Behavior** 1 (1982):3-13. **A3183**

Evoked Potentials Related to Hair Cadmium and Lead in Children. R.W. Thatcher, R. McAlaster, M.L. Lester. **Cognition and Brain Activity, Annals of the New York Academy of Sciences, n.p., 1982.** **A3184**

Hemispheric EEG Asymmetries Related to Cognitive Functioning in Children. R.W. Thathcer, R. McAlaster, M.L. Lester, R. Horst, D.S. Cantor. In **Cognitive Processing in the Right Hemisphere.** New York: Academic Press, 1982. **A3185**

Intelligence and Lead Toxins in Rural Children. R.W. Thatcher, M.L. Lester, R. McAlaster, R. Horst, S.W. Ignasias. **Journal of Learning Disabilities,** 1982. **A3186**

Neurometrics: A Matter of Scale? R.W. Thatcher. **Sixth International Evoked Potential Conference, 1981 Proceedings,** New York Academy of Sciences, n.p. **A3187**

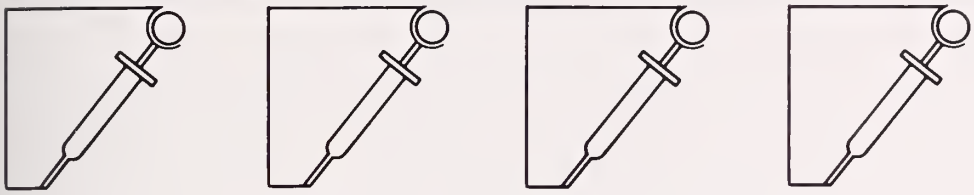
Effects of Child Participation in Preschool Programs on the Adult Population in the Rural Context: Family Case Studies. C.S. Henkin. Special Project Report to USDA/CSRS, 1982. **A3281**

Differential Effects of Age on Sensory Evoked Potentials in Children. R.L. Horst, R.W. Thatcher, M.L. Lester, R. McAlaster **Proceedings of the symposium "Event-Related Potentials in Children"**, 1981. **A3374**

Evoked Potential Correlates of Cognitive Functioning in Children. R.W. Thatcher, R. McAlaster, R.L. Horst, M.L. Lester. **Proceedings of the symposium "Event-Related Potentials in Children"**, 1981. **A3375**

Comparison Among EEG, Hair Minerals and Diet Predictions of Reading Performance in Children. R.W. Thatcher, R. McAlaster, M.L. Lester, D.S. Cantor. **New York Academy of Sciences**, 1982. **A3376**

Rationale For Using ERPs in Aberrent Developmental Research. R.L. Horst, R.W. Thatcher. **Proceedings of the Sixth International Evoked Potential Conference**, 1981. **A3377**



Veterinary Science

Scientific Articles

Virus Persistency in Blood Lymphocytes, Tissue Macrophages, Visceral and Nervous Tissues of Ponies Experimentally Infected with Equine Herpesvirus 1. S.K. Dutta, A.C. Myrup. Paper presented at the 62nd Conference of Research Workers in Animal Diseases, Chicago, November 9-10, 1982. **A3046**

An Overview of Infectious Bronchitis Virus Serptypes. W.W. Marquardt. Paper presented at the National Poultry Health and Condemnations Meeting, Delmar, Maryland, October 20-21, 1981. **A3052**

Comparison of Ciliary Activity and Virus Recovery From Tracheas of Chickens and Humoral Immunity After Inoculation With Serotypes of Avian Infectious Bronchitis Virus. W.W. Marquardt, S.K. Kadavil, D.B. Snyder. **Avian Diseases** 26 (Oct./Dec. 1982): 828-834. **A3156**

Epizootiology, Physiology, Histopathology and Other Observations from an Outbreak of Urolithiasis in Chickens. E.T. Mallinson, R.F. Wideman, H. Rothenbacher, W.W. Marquardt, G. Stein, Jr. Paper presented at the AVMA July 14-22, 1982 and **AVMA Journal** 181 (August): 282-283 (abstract). **A3170**

Methodology for Rapid Flock Profiling by Enzyme-Linked Immunosorbent Assay: Measurement of Antibody Against Selected Avian Viruses in a Single Serum Dilution. D.B. Snyder, W.W. Marquardt, E.T. Mallinson, E. Russek. Paper presented at the Northeastern Conference on Avian Diseases, Blacksburg, Virginia, June 21-22, 1982. **A3177**

Rapid Serological Profiling by Enzyme-Linked Immunosorbent Assay: I. Measurement of Antibody Activity Titer Against Newcastle Disease Virus in a Single Serum Dilution. D.B. Snyder, W.W. Marquardt, E.T. Mallinson, E. Russek. **Avian Diseases.** **A3221**

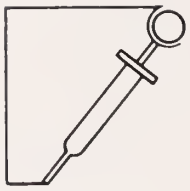
*Diurnal Variation in the Activity Budget and Recognition Behavior of Captive Outdoor Housed Brooks Range Marmots (***Marmota broweri***).* M. Loibl. Paper presented at the Alaskan Science Conference, September 1982. **A3251**

In Vivo *Harboring of Equine Herpesvirus 1 in Leukocyte Populations and Subpopulations and Their Quantitation from Experimentally Infected Ponies.* J.C. Scott, S.K. Dutta, A.C. Myrup. **American Journal of Veterinary Research.** **A3258**

Infectious Center Assay of Intracellular Virus and Infective Virus Titer for Equine Mononuclear Cells Infected **In Vivo** *and* **In Vitro** *With Equine Herpesviruses.* S.K. Dutta, A.C. Myrup. **Candian Journal of Comparative Medicine.** **A3259**

Atypical Serologic Reactions for Mycoplasma in Breeding Flocks. E.T. Mallinson. **Avian Diseases.** **A3279**

Live Vaccines in the Eradication of Avian Mycoplasmosis. E.T. Mallinson. **Avian Diseases.** **A3287**



Detection of Equine Herpesvirus 1 and the Specific Antibody by Enzyme-Linked Immunosorbent Assay. S.K. Dutta, N.C. Talbot, A.C. Myrup. Paper presented at the Conference of Research Workers in Animal Diseases, Chicago, November 9-10, 1982. **A3297**

Detection of Antibody Class Response and Its Relationship With Complement-Mediated Serological Tests in Experimental Equine Herpesvirus 1 Infection. N.C. Talbot, S.K. Dutta, A.C. Myrup. Paper presented at the Conference of Research Workers in Animal Diseases, Chicago, November 9-10, 1982. **A3298**

Lymphosarcoma of the Bovine Heart. J.E. Manspeaker, M.A. Haaland, J.P. Davidson. **Small Animal Clinician** 77(6): 949-951. **A3324**

Occlusion of a Bovine Oviduct by Setaria Labiatopapillosa. J.E. Manspeaker, M.A. Haaland, K.H. Nepote. **Veterinary Medicine/ Small Animal Clinician** 78 (1). **A3325**

Incidence and Degree of Endometrial Periglandular Fibrosis in Parity 1 Dairy Cows. J.E. Manspeaker, M.A. Haaland, J.P. Davidson. **Veterinary Medicine/Small Animal Clinician.** **A3332**

Implementation of Uterine Biopsy in Bovine Reproduction: A Veterinary Practitioner's Diagnostic Tool. J.E. Manspeaker, M.A. Haaland. **Veterinary Medicine/Small Animal Clinician.** **A3353**

Bovine Leukosis Involving the Gall Bladder in a Dairy Cow. M.A. Haaland, J.E. Manspeaker, J.P. Davidson, K.A. Chowdry. **Veterinary Medicine/Small Animal Clinician 78 (5).** **A3372**